AGENCY OF ENVIRONMENTAL CONSERVATION

DEPARTMENT OF FORESTS, PARKS AND RECREATION

STATE OF VERMONT

FOREST INSECT AND DISEASE CONDITIONS

SOUTHERN REGION

Calendar Year 1983

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Forest Resource Protection

INTRODUCTION

The information in this report is based largely on aerial surveys to detect defoliation as well as ground surveys and observations of Forest Resource Protection personnel and other forestry staff. An aerial survey was flown in early July to detect mortality; an additional survey was flown in early September to detect maple leaf cutter and birch defoliation. Diagnostic assistance was provided by the University of Vermont and the U.S.D.A. Forest Service.

The winter of 1983 began with below average snowfall, and above average temperatures. March through May was cold and wet, with hard frosts occurring in mid-May. In June, the weather became hot and dry, and remained excessively dry through July. Rainfall in August was just in excess of 2".

Dieback of hardwoods was widespread, especially at high elevations, and where logging had occurred.

Although there were no major defoliator problems, mortality from previous defoliations continued to be apparent. The unusual weather conditions resulted in a large number of fungus diseases early in the season, and widespread symptoms related to drought stress, as well as wind and ice damage.

FOREST INSECTS

Hardwood Defoliators

Gypsy moth, Lymantria dispar, caused no noticeable defoliation this year. Occasional insects were observed, including trace populations in Pownal, Rupert and Sandgate. Dieback and stress were scattered in previous defoliated areas. On some poor sites, particularly with shallow soils, mortality was heavy. In one oak-northern hardwood stand in Dorset half of the basal area was dead. Generally mortality was heaviest among smaller size classes. Mortality may increase if dry conditions continue.

Forest tent caterpillar, Malacosoma disstria, caused no defoliation, and caterpillars were not seen. In one previous outbreak area in Mendon, only one of ten new egg masses hatched this spring. The caterpillars from these eggs died before the second instar.

Areas of mortality continue to show up where forest tent caterpillars caused heavy defoliation for several consecutive years. Approximately five thousand acres of mortality in Rutland and Windsor Counties were mapped from the air. Mortality is heavy in about one quarter of that area.

Maple leaf cutter, Paraclemensia acerifoliella, is increasing in scattered areas, with heavy defoliation occurring in Putney, Pownal, Rochester and Pittsfield. One thirty acre sugarbush in Pownal was sprayed on July 7 with Sevin 80S, Dieback from previous defoliations was beginning to occur in this stand. Pre-spray sampling showed over 7 mines per leaf.

Saddled prominent, Heterocampa guttivata, caused tree mortality, is continuing to occur with one new area observed (North Pomfret). Plots in the Downer State Forest, which was defoliated in 1979 & 1980, indicate that mortality may soon level off. Most trees which are not dead or moribund appear to be recovering. Mortality figures from this stand are shown below.

TREE CONDITION IN 1981-1983 IN SADDLED PROMINENT DEFOLIATED STAND, DOWNER STATE FOREST, BY YEAR

Percent of Trees	1981	1982	1983
Dying	33	39	12
Dead	9	12	42

A complex of birch defoliators again caused widespread browning of birch foliage during August. Damage was more noticeable in some areas due to dry conditions, although insect levels are not thought to be higher. The insects involved are birch leaf miner, Fenusa pusilla, birch leaf folder, Ancylis discigerana, and birch skeletonizer, Bucculatrix canadensiella.

Bruce spanworm, Operophtera bruceata, was observed throughout the region, causing noticeable defoliation in some areas, particularly where other defoliators had been active in previous years.

One sugarbush in South Woodstock which had been defoliated in 1982 was sprayed in late May with Sevin 80S. Dieback was already present in the stand because of prior defoliation by saddled prominent. The insecticide reduced caterpillar density from 4 per ten leaf clusters to 0.5 per ten clusters. Egg density was sampled in this sugarbush in late April. All eggs on woody vegetation between 3½ and 4½ feet from the ground were counted. Strips ten feet wide and one chain long were the sample units. On six strips, numbers ranged from 0 to 60 eggs. The average per strip was 18. Eggs were found singly or in small groups.

Locust leaf miner, Odontata dorsalis, is increasing in Windham County.

Mountain ash sawfly, Pristophora geniculata, was present in reduced numbers in Rutland and Windsor Counties.

Cherry scallop shall moth, Hydria prunivorata, was observed occasionally in Windham and Windsor Counties.

Ugly nest caterpillar, Archips cerasevoranus, was observed in Rutland County (Ira).

Fall Webworm, Hyphantria cunea, was observed in Windsor County.

Birch Tube Maker, Acrobasis betulella, was observed in Windsor County (Springfield).

Imported Willow Leaf Beetle, Plagiodera versicolora, was observed causing defoliation in Windham County.

Elm Leaf Beetle, Pyrrhalta luteola, was observed occasionally causing defoliation.

Erineum Mites were observed causing heavy damage to ornamental white birch in Windsor County (Weston(.

Gouty Vein Gall Midge, Dasineura communis, was heavy on some ornamental sugar maples in Windsor County (Norwich).

Maple Trumpet Skeletonizer, Epinotia aceriella, populations were light throughout the region.

The following were not observed:

Eastern Tent Caterpillar	Malacosoma americanus
Satin Moth	Leucoma salicis
Maple Petiole Borer	Caulocampus acericaulis
Pear Sawfly	Caliroa cerasi
Maple Webworm	Tetralopha asperatella
Solitary Leaf Roller	Sparganothis pettitana
Green Striped Mapleworm	Anisota rubicunda
Linden Looper	Erannis tiliaria
Half-Winged Geometer	Phigalia titea
Large Aspen Tortrix	Choristoneura conflictana
Spiny Elm Caterpillar	Nymphalis antiopa
Orange Humped Mapleworm	Symmerista leucytis
Green Fruitworm	Lithophane antennata
Fall Cankerworm	Alsophila pometaria
Spring Cankerworm	Paleacrita vernata

Softwood Defoliators

Larch Casebearer, Coleophora laricella, populations appear to be increasing with some defoliation observed in Windham County.

Arborvitae leaf miner, Argyresthia thuiella, caused light damage in scattered locations.

Balsam Gall Midge, Paradiplosis tumifex, was observed causing light damage in scattered locations.

Spruce Budworm, Choristoneura fumiferana, has not been observed in the region. Four pheromone-baited delta traps were set out in the Ludlow-Shrewsbury area. Sites included a mountain top, upper slope fir-hardwood transition forest, and spruce-fir flats. The traps were set in early August, at the tail end of the normal flight period. No budworm adults were caught, but by mid-September there were 4 to 12 adults of another moth species in each trap.

Balsam Twig Aphid, Mindarus abietinus, was observed throughout the region, and was heavy in parts of Rutland County (Shrewsbury, Rutland and Sherburne).

Thrips caused distortion, stunting and swelling of Scots pine Christmas trees in Rutland County (Mt. Holly). The damage was exacerbated by pruning and poor weed control.

Hardwood Bud, Shoot and Stem Insects

Ambrosia beetles were observed on dying birch and maple in previously defoliated areas.

The following were not observed:

Hickory Gall Aphid	Phylloxera caryaecaulis
Oystershell Scale	Lepidosaphes ulmi
Locust Borer	Megacyllene robiniae

Softwood Bud, Shoot and Stem Insects

White Pine Weevil, Pissodes strobi, was observed throughout at moderate levels.

Eastern Larch Beetle, Dendroctonus simplex, continues to be found in association with larch decline.

Pine Bark Aphid, Pineus strobi, is widespread, and was observed causing mortality in recently outplanted white pine Christmas trees in Windsor County (Springfield).

Pine Gall Weevil, Podapion gallicola, caused flagging of scattered branches on red pine in Windsor County. Damage was heavy on affected individuals.

Eastern Spruce Gall Aphid, Adelges abietis, caused light damage to spruce trees throughout the region.

Balsam Woolly Aphid, Adelges piceae, is thought to have been responsible for gouty branch tips on balsam fir Christmas trees in Windsor County (Weston).

The following were not observed:

Root Aphid	Prociphilus americanus
Cooley Spruce Gall Aphid	Adelges cooleyi
Pales Weevil	Hylobius pales
Northern Pine Weevil	Pissodes approximatus
Pine Engraver	Ips pini
Red Turpentine Beetle	Dendroctonus rufipennis

FOREST DISEASES

Foliage Diseases

Anthracnose, caused by Gloeosporium sp, was widespread, causing defoliation of maples, as well as ash and birch in small, isolated patches. Within patches, infection patterns were erratic. Cold, wet conditions in spring are thought to have led to a buildup of the disease. Often, the patches were near openings, which tend to hold condensation longer. Most of the patches were at mid to upper slope locations. The most severe damage occurred on shallow sites. Apparently, defoliation allowed the soil to dry out faster, leading to even more extensive browning. Some white ash refoliated.

Lophodermium Needlecast, caused by Lophodermium pinastri, was observed on Scots pine in Rutland County (Mt. Holly).

Anthracnose, caused by Gnomonia platani, defoliated sycamores in Windham County. The trees refoliated.

Stem Diseases

Beech Bark Disease, caused by Cryptococcus fagisuga, and Nectria coccinea var. faginata, continues to cause mortality throughout, with chlorosis and dieback more noticeable than in previous years. Many of the areas with significant damage had been defoliated in previous years, or had suffered from wind storms or ice breakage. Dry conditions contributed to the poor health of affected trees. Permanent plots were established in three locations to monitor changes in beech scale populations.

Cytospora Canker, caused by Cytospora kunzei, was responsible for mortality in two balsam fir Christmas tree plantations in Windsor County and one Douglas fir plantation in Bennington County. The balsam fir were on wetter than average sites, and damage was occurring to scattered individuals. The Douglas fir were, in general, improperly planted.

Dutch Elm Disease, caused by Ceratocystis ulmi, resulted in increased mortality because of dry weather.

White Pine Blister Rust, caused by Cronartium ribicola, caused light damage throughout, with heavier damage reported in several Bennington County plantations.

Diebacks, Declines and Environmental Diseases

Semi-mature Tissue Needle Blight was common on white pine throughout the region. Symptoms were browning of tips or entire needles of current growth throughout the trees, sometimes with only several needles affected per fascicle. Often, a severely affected tree would be adjacent to a healthy individual. The syndrome was caused by cloudy, moist weather, followed by a prolonged hot, dry spell during needle growth. Most affected trees are expected to green up normally next spring.

Frost damage was widespread following hard frosts the nights of May 17 and 18, with heaviest damage in low lying areas in Windsor County. On individual trees, damage was lightest on lower branches due to reradiation of heat from the earth at night. Damage was most severe on trees which leaf out late. All new shoots on oak and butternut in affected areas were killed. Shoot damage was also heavy on ash, hickory, basswood, beech, alder and balsam fir. Shoots of black locust, sycamore and catalpa had not yet developed when the frost occurred. These species remained bare until mid-June. Lateral buds on other species began developing in the first week of June, and crowns of most trees appeared normal within several weeks, although dead twigs could be seen in the crowns of some individuals.

Cool, wet weather in spring is thought to have been responsible for delayed greening up of sugar maples, particularly at high elevations. Sugar maple foliage retained the reddish color of developing leaves into June. Frost may also have been involved.

Dry mid-summer conditions contributed to a variety of problems throughout the region, especially in Bennington County where conditions were most severe. On shallow sites, chlorosis and leaf scorch begain to appear in early August, especially on sugar maple and beech. Drought is thought to have exacerbated foliar browning caused by anthracnose, maple leaf cutter and birch defoliators. Beech bark disease and Dutch elm disease caused more damage because of poor water availability. The effects of water shortage are expected to be most severe on those sites where trees were thin crowned from ice or wind, and stands which had been recently thinned, allowing more sunlight to reach the forest floor.

Red maples are recovering poorly from the stress resulting in heavy seed production in 1982.

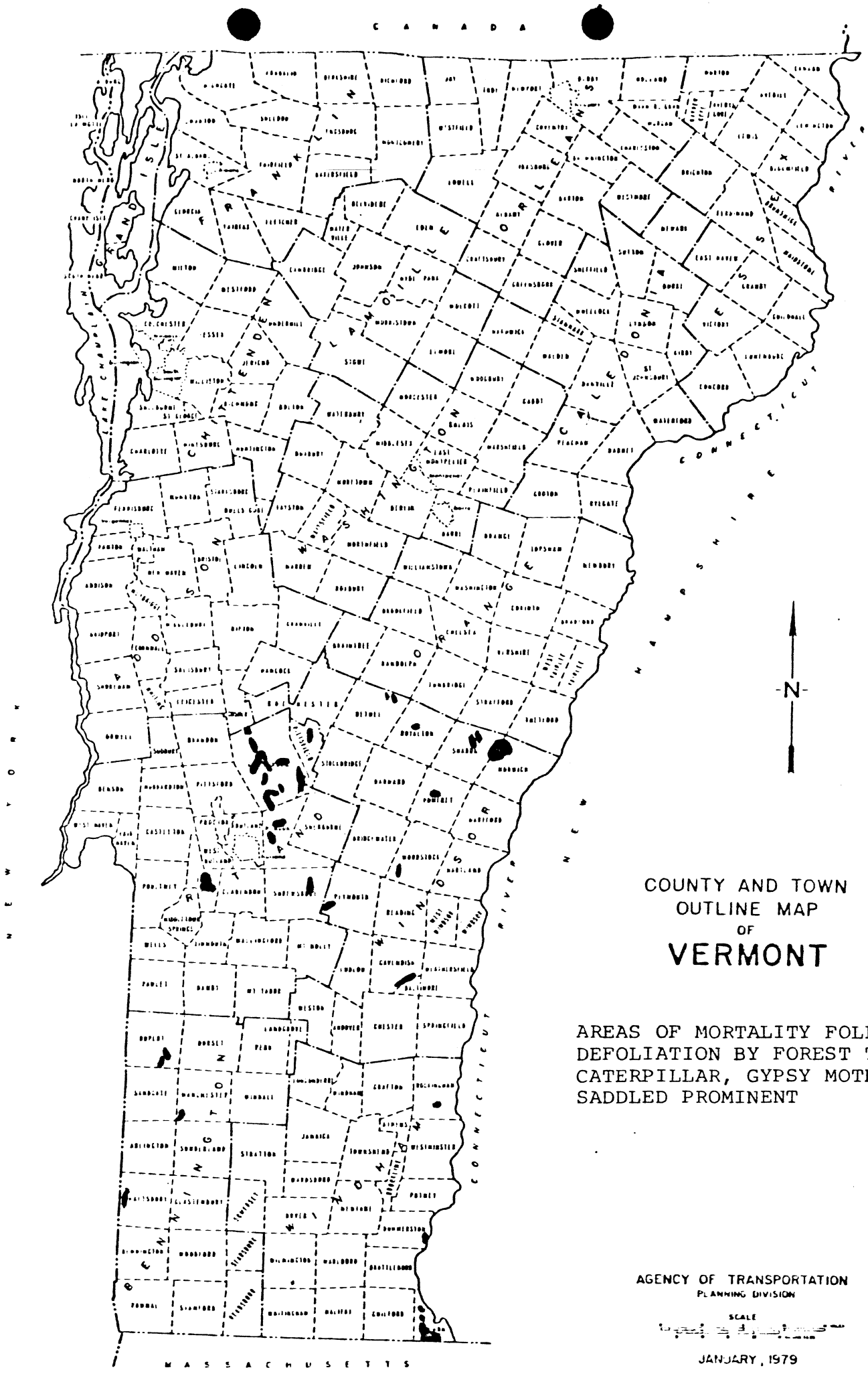
A mid-July hail storm and accompanying winds were responsible for moderate defoliation and twig breakage in several northern hardwood stands in Rutland County (Shrewsbury). Dry weather contributed to the problem. Wilting was observed in the stand shortly after the storm, and scorch began to show up about a week later. Anthracnose symptoms were also present.

Larch Decline symptoms developed late this year, with chlorosis first appearing in late August. The rate of increase appears to be slowing down.

Animal Damage

Porcupine damage levels are similar to previous years, with isolated problem areas throughout the region.

Deer damage was eliminated in a Christmas tree plantation in Bennington County (Pownal) by cutting adjacent hedgerows. This reduced screening and security for deer browsing in the area.



COUNTY AND TOWN OUTLINE MAP OF VERMONT

AREAS OF MORTALITY FOLLOWING DEFOLIATION BY FOREST TENT CATERPILLAR, GYPSY MOTH, OR SADDLED PROMINENT

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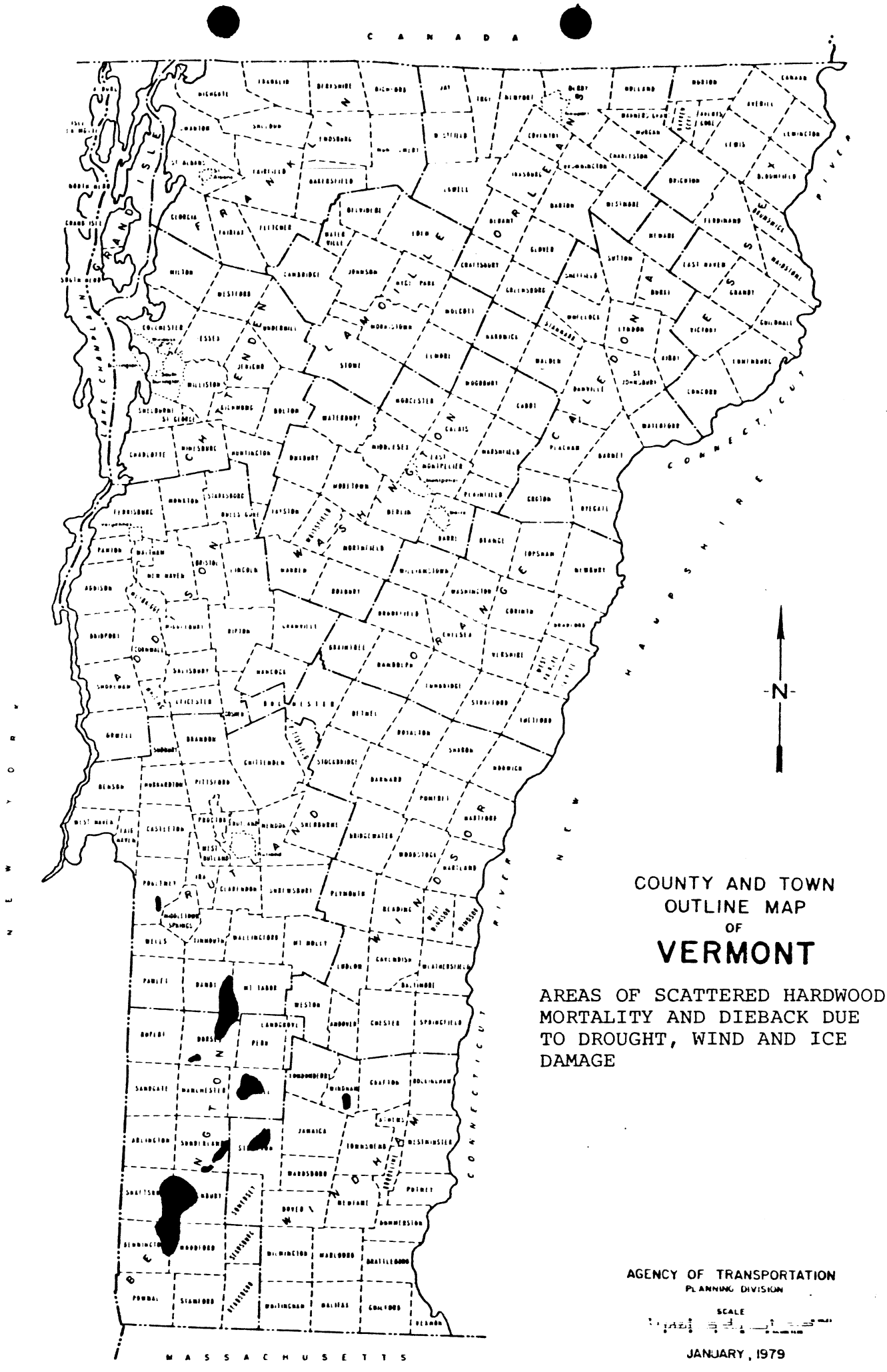
SCALE

JANUARY, 1979



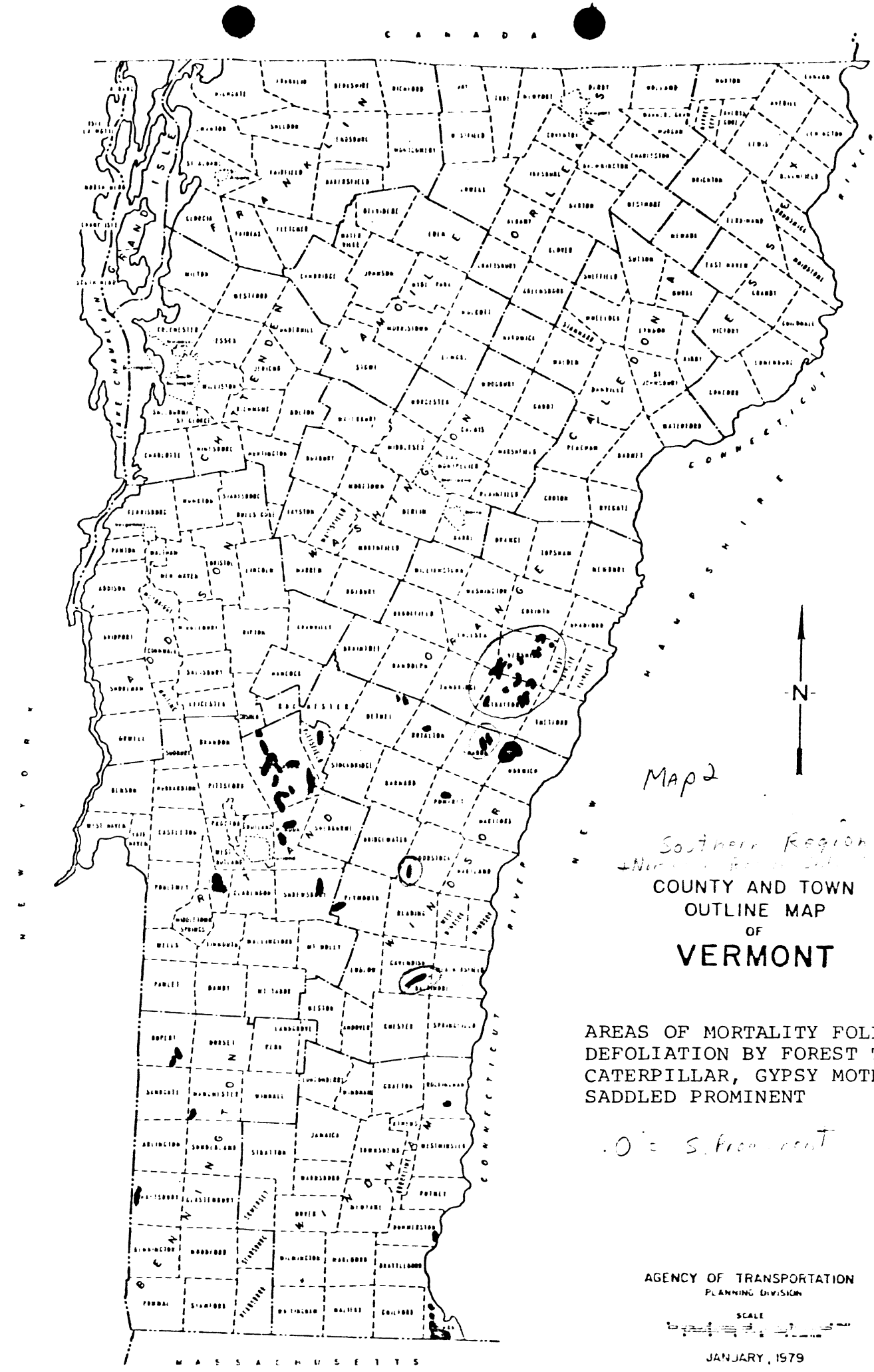
COUNTY AND TOWN OUTLINE MAP OF VERMONT

AREAS OF SCATTERED HARDWOOD MORTALITY AND DIEBACK DUE TO DROUGHT, WIND AND ICE DAMAGE

AGENCY OF TRANSPORTATION
PLANNING DIVISION

SCALE

JANUARY, 1979



Map 2

Southern Region

COUNTY AND TOWN OUTLINE MAP OF VERMONT

AREAS OF MORTALITY FOLLOWING DEFOLIATION BY FOREST TENT CATERPILLAR, GYPSY MOTH, OR SADDLED PROMINENT

.0 = S. Prominent

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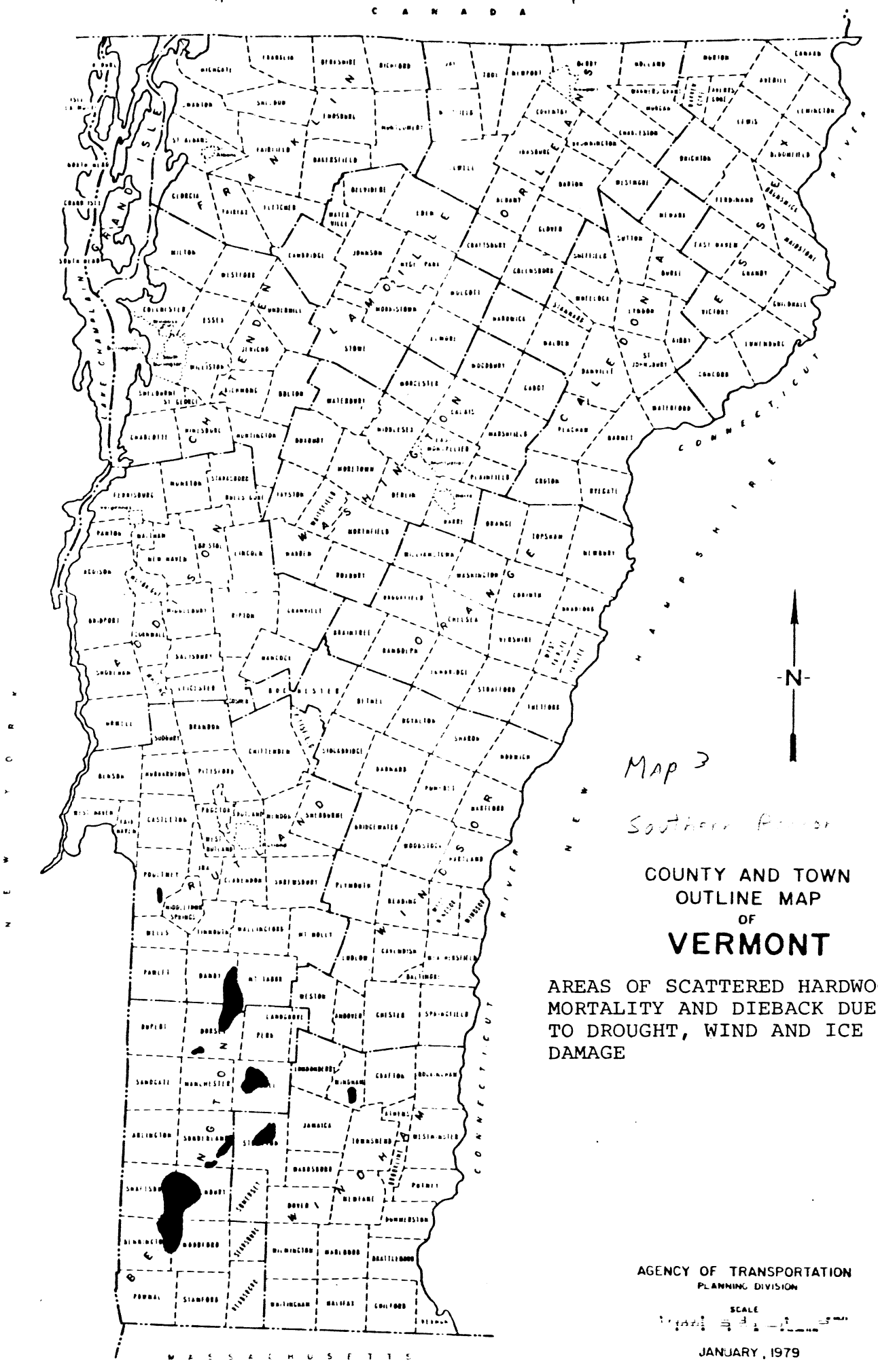
SCALE

JANUARY, 1979



Map 3

Southern Portion

COUNTY AND TOWN OUTLINE MAP OF VERMONT

AREAS OF SCATTERED HARDWOOD MORTALITY AND DIEBACK DUE TO DROUGHT, WIND AND ICE DAMAGE

AGENCY OF TRANSPORTATION
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SCALE

JANUARY, 1979

Margaret - will send a narrative on this later but here is the data.

2. Ron

2/ Tree Mortality

1. Light - 1 to 10%, patchy, scattered mortality.

2. Moderate - 10% to 25% scattered mortality.

3. Heavy - over 25% mortality

Based on: H. Trial and M. Devine, 1981, Spruce Budworm in Maine, Maine Department of Conservation, Maine Forest Service, Technical Report No. 17.

B. Defoliation Forecast

Predict the acres of defoliation expected next year.

C. Tree Mortality and Growth in the Outbreak Area

Report estimated tree mortality and growth as indicated in the table. (Data for the State of Maine will be derived from the Growth Impact Study conducted by the University of Maine at Orono.)

Vermont 1983 DATA

		Mortality 1/		Growth 2/	
Area of Host Type	Outbreak Area	Number of Dead Trees	Volume of Dead Trees	Volume of Growth	
(thousands of acres)	(thousands of acres)	(thousands)	(thousands of cubic feet)	(thousands of cubic feet)	
				Accretion	Ingrowth
822	178	3,166	19,034	1068	534

1/ Mortality

Estimate tree mortality within the outbreak area for the preceding calendar year. Report number of trees and volume. The degree of accuracy for the estimates should be given, if possible.

2/ Growth

Estimate growth per year within the outbreak area for the preceding five year period. Report accretion and ingrowth separately. Trees which are harvested or die during the 5 year period should not be considered in the calculation of growth. Again the degree of accuracy should be shown, if possible.